

PERCEPTION OF THE MOTION TRAJECTORY OF OBJECTS FROM MOVING CAST SHADOWS IN INFANT JAPANESE MACAQUES (*MACACA FUSCATA*)

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The shadows cast by moving objects enable human adults and infants to infer the motion trajectories of objects. Nonhuman animals must also be able to discriminate between objects and their shadows and infer the spatial layout of objects from cast shadows. However, the evolutionary and comparative developmental origins of sensitivity to cast shadows have not been investigated. In this study, we used a familiarity/novelty preferential looking procedure to assess the ability of infant macaques, aged 7–24 weeks, to discriminate between a “depth” display containing a ball and cast shadow moving diagonally and an “up” display containing a ball with a diagonal trajectory and a shadow with a horizontal trajectory. The infant macaques familiarized with “depth” display were presented both “up” and “depth” displays during test. They looked significantly longer “up” display than “depth” display. To obtain additional evidence that infant macaques are sensitive to spatial relationship between the object and shadow, they were also familiarized to and tested with the displays in which the spatial relationship between the ball and shadow was reversed from those used in the “up” and “depth” displays. The infant macaques did not showed differences between the looking times of the “no-up” and “no-depth” displays. The infant macaques could discriminate the trajectories of the balls based on the moving shadows. These findings suggest that the ability to perceive the motion trajectory of an object from the moving shadow is common to both humans and macaques.

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